

Title (en)

High tensile strength cold rolled steel sheet having excellent strain age hardening characteristics and the production thereof

Title (de)

Hochfestes warmgewalztes Stahlblech mit ausgezeichneten Reckalterungseigenschaften

Title (fr)

Tôle d'acier laminée à froid à haute résistance présentant d'excellentes propriétés de durcissement par vieillissement par l'écrouissage

Publication

EP 1571230 B1 20061213 (EN)

Application

EP 05006029 A 20010214

Priority

- EP 01904406 A 20010214
- JP 2000053923 A 20000229
- JP 2000151170 A 20000523
- JP 2000162497 A 20000531

Abstract (en)

[origin: EP1193322A1] The present invention presents a high tensile strength cold rolled steel sheet having excellent formability, impact resistance and strain age hardening characteristics, and the production thereof. As a specific means, a slab having a composition which contains, by mass %, 0.15% or less of C, 0.02% or less of Al, and 0.0050 to 0.0250% of N at N/A1 of 0.3 or higher, and has N in a solid solution state at 0.0010% or more, is first hot rolled at the finish rolling delivery-side temperature of 800 DEG C or above, and is subsequently coiled at the coiling temperature of 750 DEG C or below to prepare a hot rolled plate. Then, after cold rolling, the hot rolled plate is continuously cooled at a temperature from the recrystallization temperature to 900 DEG C at a holding time of 10 to 120 seconds, and is cooled by primary cooling in which the hot rolled plate is cooled to 500 DEG C or below at a cooling rate of 10 to 300 DEG C/s, and furthermore if necessary, by secondary cooling in which a residence time is 300 seconds or less in a temperature range of the primary cooling stopping temperature or higher and 350 DEG C or higher. Provided is a steel sheet containing a ferritic phase having an average crystal grain size of 10 μ m or less at an area ratio of 50% or more, and if necessary, a martensitic phase at an area ratio of 3% or more as a second phase.

IPC 8 full level

C22C 38/00 (2006.01); **C21D 8/02** (2006.01); **C21D 9/46** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/06** (2006.01); **C22C 38/12** (2006.01); **C22C 38/22** (2006.01); **C22C 38/38** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP KR US)

C21D 8/0226 (2013.01 - EP US); **C21D 8/0236** (2013.01 - EP US); **C21D 8/0268** (2013.01 - EP US); **C21D 8/0273** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP US); **C22C 38/12** (2013.01 - EP US); **C22C 38/22** (2013.01 - EP US); **C22C 38/38** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP US)

Cited by

RU2667947C2; US10995386B2

Designated contracting state (EPC)

BE DE FR GB IT

DOCDB simple family (publication)

EP 1193322 A1 20020403; **EP 1193322 A4 20040630**; **EP 1193322 B1 20060705**; CA 2368504 A1 20010907; CA 2368504 C 20071218; CN 1145709 C 20040414; CN 1366559 A 20020828; DE 60121266 D1 20060817; DE 60121266 T2 20061109; DE 60125253 D1 20070125; DE 60125253 T2 20070405; DE 60127879 D1 20070524; DE 60127879 T2 20070906; EP 1571229 A1 20050907; EP 1571229 B1 20070411; EP 1571230 A1 20050907; EP 1571230 B1 20061213; KR 100595946 B1 20060703; KR 20010112947 A 20011222; TW 550296 B 20030901; US 2003047256 A1 20030313; US 2003145920 A1 20030807; US 2003188811 A1 20031009; US 6702904 B2 20040309; US 6899771 B2 20050531; US 6902632 B2 20050607; WO 0164967 A1 20010907

DOCDB simple family (application)

EP 01904406 A 20010214; CA 2368504 A 20010214; CN 01801125 A 20010214; DE 60121266 T 20010214; DE 60125253 T 20010214; DE 60127879 T 20010214; EP 05006028 A 20010214; EP 05006029 A 20010214; JP 0101003 W 20010214; KR 20017013657 A 20011025; TW 90103279 A 20010214; US 34116503 A 20030113; US 34116603 A 20030113; US 98051301 A 20011024